#19
BA 1-29-03

TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No.
ITL.0045US

In Re Application Of: **Christoph E. Scheurich, et al.**

Serial No.	Filing Date	Examiner	Group Art Unit
09/083,601	May 22, 1998	Shawn S. An	2613

Invention: **MAINTAINING A FRAME RATE IN A DIGITAL IMAGING SYSTEM**

TO THE ASSISTANT COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on **November 11, 2002**

The fee for filing this Appeal Brief is: **$320.00**

☒ A check in the amount of the fee is enclosed.

☐ The Commissioner has already been authorized to charge fees in this application to a Deposit Account. A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **20-1504**
A duplicate copy of this sheet is enclosed.

Signature

Dated: **January 13, 2003**

Fred G. Pruner, Jr., Reg. No. 40,779
Trop, Pruner & Hu, P.C.
8554 Katy Freeway, Suite 100
Houston, Texas 77024
(713) 468-8880 [Phone]
(713) 468-8883 [Fax]

I certify that this document and fee is being deposited on 01/13/2003 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Signature of Person Mailing Correspondence

Debra Cutrona

Typed or Printed Name of Person Mailing Correspondence

21906
PATENT TRADEMARK OFFICE

CC:

P30LARGE/REV03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Christoph E. Scheurich, et al.	§	Group Art Unit:	2613
Serial No.:	09/083,601	§		
		§	Examiner:	Shawn S. An
Filed:	May 22, 1998	§		
For:	Maintaining a Frame Rate in a Digital Imaging System	§	Atty. Dkt. No.:	ITL.0045US (P5755)

Board of Patent Appeals & Interferences
Commissioner for Patents
Washington, D.C. 20231

APPEAL BRIEF

Dear Sir:

Applicant hereby appeals from the Final Rejection dated September 11, 2002.

I. REAL PARTY IN INTEREST

The real party in interest is Intel Corporation, the assignee of the present application by virtue of the assignment recorded at Reel/Frame 9201/0707.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF THE CLAIMS

The application includes claims 19-38, which have been finally rejected and are the subject of this appeal.

Date of Deposit: January 13, 2003
I hereby certify under 37 CFR 1.8(a) that this correspondence is being deposited with the United States Postal Service as **first class mail** with sufficient postage on the date indicated above and is addressed to the Board of Patent Appeals & Interferences, Commissioner for Patents, Washington, DC 20231.
Debra Cutrona
Debra Cutrona

IV. STATUS OF AMENDMENTS

All amendments have been entered.

V. SUMMARY OF THE INVENTION

Referring to Fig. 2, an embodiment 20 of a digital imaging system in accordance with the invention includes a driver program 23 that causes a computer 22 to maintain a requested frame rate in communications between a camera 24 and the computer 22 regardless of the bandwidth that is available for the communications. In this manner, an application program 25 may, when executed by the computer 22, request a specific frame rate and a frame resolution for image data that is communicated between the camera 24 and the computer 22. If the usable bandwidth for communicating the image data does not support the requested resolution and frame rate, the driver program 23 may downwardly adjust the requested resolution to maintain the requested frame rate. In this manner, the quality (a lower resolution, for example) of the transmitted image may be traded off to maintain the requested frame rate. Specification, p. 4.

However, if the available bandwidth supports these requests, the driver program 23, in some embodiments, ensures that the requested resolution and frame rate are met. For example, the available bandwidth may be 6 megabits per second. If the application program 25 requests a resolution of 160 x 120 at 30 frames per second (fps) or a resolution of 320 x 240 at 10 fps, then the driver program 23 does not need to downwardly adjust the requested resolution (see formula on p. 2). However, if the application program 25 requests a resolution of 320 x 240 at 30 fps, the

driver program 23 may cause the camera 24 to deliver frames at a lower resolution of 180 x 135 while maintaining the requested frame rate of 30 fps. Specification, p. 4.

To deliver the requested resolution to the application program 25, the driver program 23 may cause the computer 22 to upwardly scale the resolution of the received image data to achieve the requested resolution. For example, referring to the previous example, the driver program 23 might cause the computer 22 to upscale the received image data by 1 7/9 (after the image data is received by the computer 22) to achieve the requested resolution of 320 x 240. Specification, p. 4.

The advantages of maintaining a requested frame rate may include one or more of the following: The resolution and frame rate capability of the camera and driver program may be fully supported. Dynamic bandwidth deficits may be accommodated. Execution of the application program may not be affected by the available bandwidth of a communication link between the computer and the camera. Specification, pp. 4-5.

In some embodiments, the bandwidths that are available are quanitized into discrete sizes. For example, if the bus 26 is a USB bus, one of the properties of the USB bus requires that data be communicated across the USB bus in the form of packets. In this manner, the image data may be transmitted across the bus 26 in the form of asynchronous packets, each of which may have one of several, discrete sizes. Therefore, if a bandwidth that satisfies the frame rate and resolution specifications may not be met with one current packet size, the driver program 23 downgrades to a smaller packet size. Thus, the available bandwidths may be quanitized. Specification, p. 5.

Not only may the bandwidths be quanitized, the resolutions may also be quanitized. For example, the camera 24 may only be available to scale resolutions down by a 8:1, 4:1 or 2:1 ratio, as examples. Thus, for example, if an image captured by the camera 24 has a resolution of 640 x 480, the camera 24 may only be able to furnish image data (to the bus 26) that indicates an image having a resolution of 640 x 480, 320 x 240, 160 x 120, or 80 x 60. In some embodiments, the discrete sizes available for the bandwidth and resolution are taken into account by the driver program 23. Specification, p. 5.

Because the usable bandwidth on the bus 26 may dynamically change, the driver routine 23 may be invoked automatically by the computer 22. For example, the driver program 23 may be invoked periodically by an interrupt request or may be invoked when a predetermined condition occurs. The driver program 23 may also be invoked, for example, when the application program 25 first requests the frame rate and resolution. Specification, p. 5.

Referring to Fig. 3, in some embodiments, the driver program 23 causes the computer 22 to first determine (block 35) the required bandwidth based on the requested values for the frame rate and resolution. Next, the driver program 23 causes the computer 22 to determine (block 36) the usable bandwidth of the bus 26. This step, in some embodiments, may include a series of tests where discrete packet sizes are requested to determine the usable bandwidth. For example, the driver program 23 may cause the computer 22 to submit a request to an interface (not shown) for the bus 26 to attempt allocate a first packet size for communications across the bus 26. If the interface denies this request, then a smaller bandwidth (and packet size) is requested.

This process continues until a packet size, and thus a usable bandwidth, is determined. Specification, pp. 5-6.

Once the required bandwidth is determined, the computer 22 determines (diamond 38) whether the required bandwidth exceeds the available bandwidth. If so, the computer 22 sets (block 40) the frame rate to the requested value and decreases (block 41) the resolution to a value below the requested resolution before returning from execution of the program 13. In this readjustment of the resolution, the computer 22 takes into account the scaling capabilities of the camera 24. If the required bandwidth can be accommodated, then the computer 22 sets (block 44) the frame rate and resolution equal to the requested values and returns from execution of the driver program 23. Specification, p. 6.

Referring to Fig. 4, the camera 24, in some embodiments, includes a controller 62 that interacts with a scaling unit 66 to scale the frames and a compression unit 68 to compress the size of the frame that is transmitted across the bus 26. The camera 24 may also include a bus interface 70 that interacts with the controller 62 to furnish the signals to the bus 26 that are representative of the frame. The camera 24 includes optics 60 that focus the optical image to be captured onto an array of pixel sensors 69 (a CMOS active pixel sensor array, for example) which electrically captures the image. An analog-to-digital (A/D) converter 64 receives analog signals from the sensors 69 and furnishes the signals to the scaling unit 66. The scaling unit 66 then passes the scaled image data to the compression unit 68 which compresses the image data and furnishes the data to the bus interface 70. The controller 62 interacts with the sensors 69 to control the exposure time of the sensors 69 to the image and the retrieval of data from the sensors

69. The controller 62 also receives the frame rate and resolution that is requested by the driver program 23 and interacts with the scaling unit 66 and the bus interface 70 to ensure that the requests by the program 23 are met. Specification, p. 6.

Referring to Fig. 5, in some embodiments, the computer 22 might include a microprocessor 80 which executes a copy of the driver 23 and application 25 programs which are stored in a system memory 88. In some embodiments, the microprocessor 80 interacts with the camera 24 to communicate frames at a frame rate. Each frame indicates an image having a resolution. The driver program 23 causes the computer 22 to receive a request to set the frame rate approximately equal to a rate value and a request to set the resolution approximately equal to a first resolution value. The driver program 23 causes the computer 22 to set the frame rate approximately equal to the rate value, determine whether communication of the image data pursuant to the rate value and resolution value exceeds the available bandwidth, and based on the determination, regulate the resolution. In other embodiments, the computer system may include multiple microprocessors, and some of these microprocessors might perform the above-stated functions. Specification, pp. 6-7.

The memory 88, the microprocessor 80 and bridge/system controller circuitry 84 are all coupled to a host bus 82. The circuitry 84 also interfaces the host bus 82 to a downstream bus 99 which is coupled to an I/O controller 90, a serial bus interface 91 (to communicate with the bus 26), and a network interface card 92, as examples. The computer 10 may also have, as examples, a CD-ROM drive 100, a floppy disk drive 94 and/or a hard disk drive 96. Specification, p. 7.

VI. ISSUES

A. Can claims 25-29 be rendered obvious when the Examiner has failed to establish a *prima facie* case of obviousness?

B. Can claims 30-34 be rendered obvious when the Examiner has failed to establish a *prima facie* case of obviousness?

C. Can claims 35-38 be rendered obvious when the Examiner has failed to establish a *prima facie* case of obviousness?

D. Can claims 19-24 be rendered obvious when the Examiner has failed to establish a *prima facie* case of obviousness?

VII. GROUPING OF THE CLAIMS

Claims 19-24 can be grouped together; claims 25-29 can be grouped together; claims 30-34 can be grouped together; and claims 35-38 can be grouped together.

VIII. ARGUMENT

All claims should be allowed over the cited references for the reasons set forth below:

A. Can claims 25-29 be rendered obvious when the Examiner has failed to establish a *prima facie* case of obviousness?

The method of independent claim 25 includes receiving a request for a first pixel resolution and determining whether it is possible to communicate first data indicative of an image having the first pixel resolution at a requested frame rate over a communication link. Claim 25 recites that if the communication of the first data at the requested frame rate is not possible, the first pixel resolution is decreased to a lower second pixel resolution and second data that is indicative of the image having the second pixel resolution is communicated over the communication link at the requested frame rate.

The Examiner rejects independent claim 25 under 35 U.S.C. § 103(a) in view of U.S. Patent No. 6,037,991 (herein referred to as "Thro"). Thro teaches a method and apparatus for communicating video information in a communication system. More particularly, Thro teaches selecting a priority between either a frame rate or a resolution per frame for the communication of frames between a mobile device and a base site. Thro, 5:4-19. Thro also discusses using a frame rate that the communication resource (over which the frames are transmitted) will support. Thro, 5:50-67.

Regarding the selection of a priority in the communication of the frames, Thro teaches that if the frame rate is selected to have priority over the resolution per frame, the frames are transmitted at a relatively high frame rate and at a relatively low resolution. Conversely, Thro teaches that if the resolution per frame is selected to have priority over the frame rate, the frames are transmitted at a relatively low frame rate and a relatively high resolution. Thro, 5:4-49.

However, Thro neither teaches (explicitly, inherently or implicitly) nor suggests decreasing a first pixel resolution to a lower second pixel resolution and communicating second data indicative of the image having the second pixel resolution over a communication link at a requested frame rate if it is not possible to communicate first data indicative of the image having the first pixel resolution.

The Examiner contends that it is considered "inherently obvious to decrease the pixel resolution." Final Office Action, p. 2. Applicant does not understand the meaning of "inherently obvious." However, if the Examiner is contending that decreasing the pixel resolution is obvious from Thro, then this is improper, because the Examiner has provided no support for the teaching

of decreasing the pixel resolution for purposes of transmitting at a requested frame rate. In this manner, to establish a *prima facie* case of obviousness, the cited reference(s) must teach all claim limitations or at least the Examiner must show support for a suggestion or motivation to modify the cited reference(s) to derive the claim limitations. M.P.E.P. § 2143. The Examiner has not met this burden, as the Examiner has not specifically shown where Thro allegedly teaches the missing claim limitations and/or where Thro suggests the missing claim limitations. Thus, the Examiner has not established a *prima facie* case of obviousness. *Ex parte Gambogi*, 62 USPQ2d 1209, 1212 (Bd. Pat. App. & Int. 2001); *In re Rijckaert*, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993); M.P.E.P. § 2143. Because the Examiner has not established a *prima facie* case of obviousness, Applicant has no duty to rebut the obviousness rejections of claims 25-29. *In re Rijckaert*, 28 USPQ2d at 1957.

If the Examiner is contending that the missing claim limitations are inherent in Thro, then the missing claim limitations must necessarily flow from the teachings of Thro. *Ex Parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990); M.P.E.P. § 2112. However, not only do the missing claim limitations not necessarily flow from Thro, Thro teaches an alternative. For example, in col. 6, ll. 38-44, Thro teaches truncating a video signal in order to facilitate transmission of the video signal at a transmission frame rate compatible with system communication resources. Thus, Thro teaches discarding part of the video signal (i.e., truncating frames from the video signal), instead of decreasing a pixel resolution for purposes of transmitting at a certain frame rate. Therefore, because at least one alternative exists to

decreasing the pixel resolution for purposes of transmitting at a certain frame rate, the missing claim limitations are not inherently taught by Thro.

Claims 26-29 are patentable for at least the reason that these claims depend from an allowable claim.

Thus, the rejections of claims 25-29 are improper and should be reversed.

B. Can claims 30-34 be rendered obvious when the Examiner has failed to establish a *prima facie* case of obviousness?

The article of independent claim 30 includes a computer readable storage medium that includes instructions to cause a processor to receive a request for a first pixel resolution and determine whether it is possible to communicate first data indicative of an image that has the first pixel resolution at a requested frame rate over a communication link. If the communication of the first data at the requested frame rate is not possible, the instructions cause the processor to decrease the first pixel resolution to a lower second pixel resolution and communicate second data that is indicative of the image that has the second pixel resolution over the communication link at the requested frame rate.

The Examiner rejects independent claim 30 under 35 U.S.C. § 103(a) as being unpatentable over Thro. In the rejection, the Examiner contends that "it would have been inherently obvious to adjust (lower) the resolution so as to facilitate transmission of a video signal at a requested transmission rate." Final Office Action, p. 2.

However, Thro does not disclose instructions to cause a processor to decrease a first pixel resolution of an image to a lower second pixel resolution for purposes of communicating data

over a communication link at a requested frame rate. The missing claim limitations are not inherent in Thro because Thro suggests at least one alternative to decreasing a pixel resolution for purposes of meeting a given frame rate, i.e., truncating the video signal itself. Therefore, the missing claim limitations do not necessarily flow from Thro and thus, cannot be considered inherent. *Ex Parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990); M.P.E.P. § 2112.

Furthermore, the Examiner fails to show any support for an alleged suggestion or motivation to modify Thro to derive the missing claim limitations and therefore, fails to establish a *prima facie* case of obviousness for claim 30. *Ex parte Gambogi*, 62 USPQ2d 1209, 1212 (Bd. Pat. App. & Int. 2001); *In re Rijckaert*, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993); M.P.E.P. § 2143.

Claims 31-34 are patentable for at least the reason that these claims depend from an allowable claim.

Thus, the rejections of claims 30-34 are improper and should be reversed.

C. Can claims 35-38 be rendered obvious when the Examiner has failed to establish a *prima facie* case of obviousness?

The computer system of claim 35 includes a computer that receives a request for a first pixel resolution and determines whether it is possible to communicate first data that is indicative of an image having the first pixel resolution at a requested frame rate over a communication link. If it is not possible, the computer decreases the first pixel resolution to a lower second pixel

resolution and communicates second data that is indicative of the image having the second pixel resolution over the communication link at the requested frame rate.

The Examiner relies on Thro in rejecting independent claim 35 under 35 U.S.C. § 103(a).

However, Thro does not teach or suggest a computer to decrease a first pixel resolution of an image to a lower second pixel resolution and communicate data that is indicative of the image having the second pixel resolution over a communication link at a requested frame rate. The missing claim limitations are not inherent in Thro because Thro suggests at least one alternative to decreasing a pixel resolution, i.e., truncating the video signal itself. Furthermore, the Examiner fails to show any support for an alleged suggestion or motivation to modify Thro to derive the missing claim limitations and therefore, fails to establish a *prima facie* case of obviousness for claim 35.

Claims 36-38 are patentable for at least the reason that these claims depend from an allowable claim.

Thus, the rejections of claims 35-38 are improper and should be reversed.

D. Can claims 19-24 be rendered obvious when the Examiner has failed to establish a *prima facie* case of obviousness?

The method of claim 24 includes determining whether it is possible to transmit data that is associated with a requested image parameter at a requested frame rate. If it is not possible, then the image parameter is adjusted and the data is transmitted.

The Examiner relies on Thro in rejecting independent claim 19 under 35 U.S.C. § 103(a). However, this rejection is improper as Thro neither teaches nor suggests adjusting an image

parameter if it is not possible to transmit data that is associated with the image parameter at a requested frame rate.

More specifically, Thro teaches truncating a video signal. However, "truncating a video signal" neither teaches nor suggests adjusting an image parameter. Furthermore, the missing claim limitations are not inherently present in Thro as truncating a video signal is an alternative to adjusting an image parameter. Thus, the Examiner fails to establish a *prima facie* case of obviousness for claim 19.

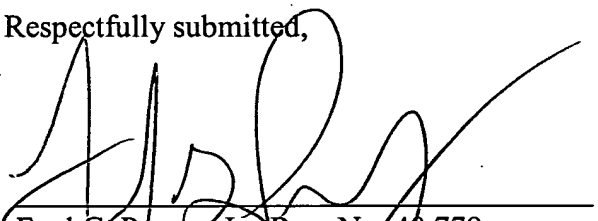
Claims 20-24 are patentable for at least the reason that these claims depend from an allowable claim.

Thus, the rejections of claims 19-24 are improper and should be reversed.

IX. CONCLUSION

The Assignee requests that each of the final rejections be reversed and that the claims subject to this appeal be allowed to issue.

Respectfully submitted,



Date: January 13, 2003

Fred G. Pruner, Jr., Reg. No. 40,779
TROP, PRUNER & HU, P.C.
8554 Katy Freeway, Suite 100
Houston, TX 77024-1805
713/468-8880 [Phone]
713/468-8883 [Facsimile]

21906
PATENT TRADEMARK OFFICE

APPENDIX OF CLAIMS

The claims on appeal are:

19. A method for communicating between a camera and a computer, comprising:

determining whether it is possible to transmit data that is associated with a requested image parameter at a requested frame rate; and

if not, adjusting the image parameter and transmitting the data.

20. The method of claim 19, wherein the adjusted image parameter comprises a decreased resolution.

21. The method of claim 19, further comprising transmitting data at the requested frame rate.

22. The method of claim 19, wherein the act of determining comprises determining an available bandwidth for communications between the camera and the computer.

23. The method of claim 22, wherein the act of determining comprises periodically evaluating the available bandwidth.

24. The method of claim 19, wherein the act of determining comprises testing for available packet sizes for transmitting the data.

25. A method comprising:

receiving a request for a first pixel resolution;

determining whether it is possible to communicate first data indicative of an image having the first pixel resolution at a requested frame rate over a communication link;

if not possible, decreasing the first pixel resolution to a lower second pixel resolution and communicating second data indicative of the image having the second pixel resolution over the communication link at the requested frame rate.

26. The method of claim 25, further comprising:

in response to determining that it is possible to communicate the first data at the requested frame rate, communicating the first data over the communication link at the requested frame rate.

27. The method of claim 25, wherein the act of determining comprises:

determining an available bandwidth for communications between the camera and the computer.

28. The method of claim 27, wherein the act of determining comprises:

periodically evaluating the available bandwidth.

29. The method of claim 25, wherein the act of determining comprises:

testing for available packet sizes for communicating the data.

30. An article comprising a computer readable storage medium comprising instructions to cause a processor to:

receive a request for a first pixel resolution,

determine whether it is possible to communicate first data indicative of an image having the first pixel resolution at a requested frame rate over a communication link, and

if not possible, decrease the first pixel resolution to a lower second pixel resolution and communicate second data indicative of the image having the second pixel resolution over the communication link at the requested frame rate.

31. The article of claim 30, wherein the instructions comprise:

instructions to cause the processor to transmit the first data over the communication link at the requested frame rate.

32. The article of claim 30, further comprising:

instructions to cause the processor to determine a usable bandwidth for communications between the computer and the camera.

33. The article of claim 32, wherein the instructions comprise:

instructions to cause the processor to periodically evaluate the available bandwidth.

34. The article of claim 30, wherein the instructions comprise:

instructions to cause the processor to test for available packet sizes to transmit the data.

35. A computer system comprising:

a communication link;

a camera coupled to the communication link; and

a computer coupled to the communication link to:

receive a request for a first pixel resolution,

determine whether it is possible to communicate first data indicative of an image having the first pixel resolution at a requested frame rate over the communication link; and

if not possible, decrease the first pixel resolution to a lower second pixel resolution and communicate second data indicative of the image having the second pixel resolution over the communication link at the requested frame rate.

36. The computer system of claim 35, wherein the computer determines whether it is possible to transmit the first data in response to determining a usable bandwidth for transmissions between the camera and the computer.

37. The computer system of claim 35, wherein the computer determines the usable bandwidth in response to testing for available packet sizes for transmitting the data.

38. The computer system of claim 35, wherein the computer further interacts with the camera to transmit the first data at the requested frame rate in response to the determination.